

WHAT IS CLAIMED IS:

1 1. In an aircraft including a fuselage, a fixed left wing and
2 a fixed right wing fixedly connected to and extending from
3 said fuselage, slats movably arranged along leading edges
4 of said wings, flaps movably arranged along trailing edges
5 of said wings, and a central flight control arrangement
6 that receives actual current flight data and control
7 commands, and that generates actuating information
8 pertinent for setting positions of said flaps and/or said
9 slats dependent on at least one of said flight data and
10 said control commands,

11 an improved flap or slat drive system comprising:

12 a central control unit conductively connected with
13 said flight control arrangement;

14 at least one flap or slat group, which group
15 respectively includes at least one said flap or slat; and

16 at least one drive station respectively allocated to
17 said at least one flap or slat group, which drive station
18 respectively includes two drives that are conductively
19 connected directly or indirectly with said central control
20 unit, and two drive transmissions that are respectively
21 individually mechanically connected to said two drives and
22 that are mechanically connected to said at least one flap
23 or slat of said flap or slat group to which said drive
24 station is allocated.

- 1 2. The flap or slat drive system in the aircraft according to
2 claim 1, wherein said drives are individually controllable
3 and actuatable by said central control unit.
- 1 3. The flap or slat drive system in the aircraft according to
2 claim 1, wherein said drives are arranged internally within
3 at least one of said wings.
- 1 4. The flap or slat drive system in the aircraft according to
2 claim 1, wherein said drive station does not include a
3 shaft mechanically coupling said two drives to each other,
4 and said two drives are electronically or electrically
5 synchronized with each other with respect to a driving
6 operation thereof by said central control unit.
- 1 5. The flap or slat drive system in the aircraft according to
2 claim 4, wherein said flap or slat group to which said
3 drive station is allocated includes only a single one of
4 said flaps or slats, and said two drive transmissions are
5 both mechanically connected to said single one flap or
6 slat.
- 1 6. The flap or slat drive system in the aircraft according to
2 claim 1, wherein said drive station further includes a
3 rotatably supported shaft that is mechanically connected to
4 both said drives, whereby said drives are mechanically
5 coupled to each other.

1 7. The flap or slat drive system in the aircraft according to
2 claim 6, wherein said flap or slat group to which said
3 drive station is allocated includes only a single one of
4 said flaps or slats, and said two drive transmissions are
5 both mechanically connected to said single one flap or
6 slat.

1 8. The flap or slat drive system in the aircraft according to
2 claim 6, wherein said flap or slat group to which said
3 drive station is allocated includes a plurality of said
4 flaps or slats arranged successively adjacent one another
5 in a span direction of one of said wings, a first one of
6 said two drive transmissions is mechanically connected to
7 a first one of said flaps or slats, and a second one of
8 said two drive transmissions is mechanically connected to
9 a second one of said flaps or slats.

1 9. The flap or slat drive system in the aircraft according to
2 claim 8, wherein said drive station further comprises at
3 least one guide transmission that is respectively
4 mechanically connected to said shaft at a location between
5 and spaced respectively from said two drives, and that is
6 respectively mechanically connected to a respective one of
7 said flaps or slats.

1 10. The flap or slat drive system in the aircraft according to
2 claim 9, wherein said flap or slat group includes exactly
3 two of said flaps or slats being said first and second

4 flaps or slats, said drive station includes exactly two of
5 said guide transmissions, a first one of said guide
6 transmissions is mechanically connected to said first flap
7 or slat, and a second one of said guide transmissions is
8 mechanically connected to said second flap or slat.

1 11. The flap or slat drive system in the aircraft according to
2 claim 9, wherein said flap or slat group includes exactly
3 three of said flaps or slats consisting of said first and
4 second flaps or slats and a third one of said flaps or
5 slats between said first and second flaps or slats, said
6 drive station includes exactly four of said guide
7 transmissions, a first one of said guide transmissions is
8 mechanically connected to said first flap or slat, second
9 and third ones of said guide transmissions are both
10 mechanically connected to said third flap or slat, and a
11 fourth one of said guide transmissions is mechanically
12 connected to said second flap or slat.

1 12. The flap or slat drive system in the aircraft according to
2 claim 6, wherein said drive station further comprises an
3 electrically actuatable shaft brake that is arranged and
4 acts on said shaft at a location between said two drives,
5 and that is conductively connected directly or indirectly
6 with said central control unit.

1 **13.** The flap or slat drive system in the aircraft according to
2 claim 6, wherein said drive station further comprises a
3 sensor that is arranged on said shaft, is adapted to sense
4 a rotational position of said shaft, and is conductively
5 connected directly or indirectly with said central control
6 unit.

1 **14.** The flap or slat drive system in the aircraft according to
2 claim 1, wherein said drive station further comprises a
3 sensor that is arranged and adapted to sense an actuation
4 position of one of said drives or one of said drive
5 transmissions, and that is conductively connected directly
6 or indirectly with said central control unit.

1 **15.** The flap or slat drive system in the aircraft according to
2 claim 1, wherein each said drive is a rotational drive
3 comprising an actuating motor.

1 **16.** The flap or slat drive system in the aircraft according to
2 claim 15, wherein said actuating motor is a stepper motor
3 having a controllable actuating speed and motor torque.

1 **17.** The flap or slat drive system in the aircraft according to
2 claim 15, wherein said actuating motor is an electrically
3 or electronically controlled motor that is controlled
4 directly or indirectly by said central control unit.

1 **18.** The flap or slat drive system in the aircraft according to
2 claim 1, further comprising plural decentralized control
3 units that are respectively allocated to said drives, and
4 that are respectively interposed and conductively connected
5 between said drives and said central control unit, whereby
6 said drives are conductively connected indirectly to said
7 central control unit respectively through said
8 decentralized control units.

1 **19.** The flap or slat drive system in the aircraft according to
2 claim 18, wherein said decentralized control units are
3 arranged in one of said wings proximate to said leading
4 edge or said trailing edge thereof.

1 **20.** The flap or slat drive system in the aircraft according to
2 claim 18, wherein said decentralized control units are
3 respectively integrated with said drives in said drive
4 station.

1 **21.** The flap or slat drive system in the aircraft according to
2 claim 18, wherein said central control unit and each one of
3 said decentralized control units respectively comprises a
4 respective control computer, and are collectively adapted
5 to monitor and synchronously control said drives of one
6 said drive station.

1 **22.** The flap or slat drive system in the aircraft according to
2 claim 1, further comprising digital data lines that
3 conductively connect said central control unit with said
4 flight control arrangement and conductively connect said
5 drives with said central control unit.

1 **23.** The flap or slat drive system in the aircraft according to
2 claim 1, wherein said at least one flap or slat group
3 comprises two of said flap or slat groups, which are not
4 mechanically or hydraulically interconnected with one
5 another.

1 **24.** The flap or slat drive system in the aircraft according to
2 claim 23, wherein said two flap or slat groups are located
3 on a same wing among said two wings.

1 **25.** The flap or slat drive system in the aircraft according to
2 claim 23, wherein said two flap or slat groups are
3 respectively located one on each of said two wings.

1 **26.** The flap or slat drive system in the aircraft according to
2 claim 1, not including a transverse shaft line that extends
3 through said fuselage from one to another of said wings.

1 **27.** The flap or slat drive system in the aircraft according to
2 claim 1, further including only straight shaft lines
3 connected to said drives, and not including any angles,
4 bends or kinks in any shaft lines.

1 **28.** The flap or slat drive system in the aircraft according to
2 claim 1, comprising a plurality of said flap or slat
3 groups, wherein any of said flap or slat groups can be
4 differentially and independently actuated by said central
5 control unit.